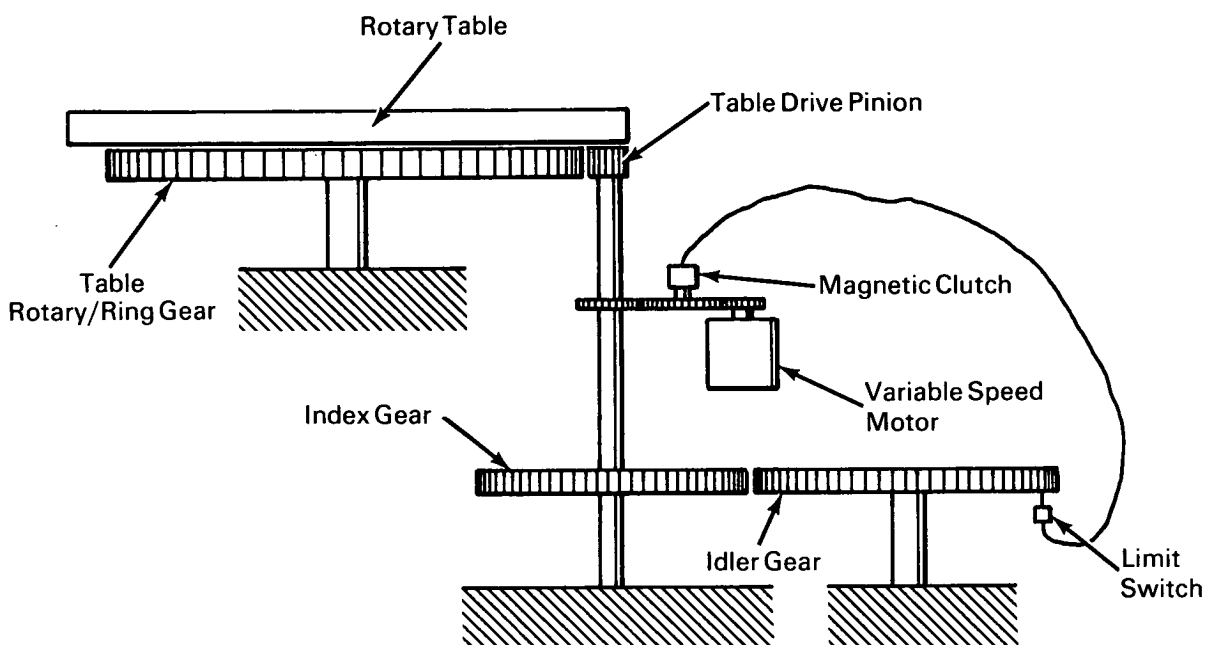


# NASA TECH BRIEF



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## Gear Drive Automatically Indexes Rotary Table



### The problem:

To develop a quick and accurate indexing method for drilling equally spaced circular hole patterns on rotary tables. The manual layout and indexing techniques presently used are too slow and place a premium on operator skill.

### The solution:

A combination indexer and drive unit which automatically rotates the table one hole spacing for each revolution of a special idler gear.

### How it's done:

The unit is installed to provide power to a conventional rotary table through the original drive

pinion and ring gear. An index gear fabricated with a number of teeth equal to the number of holes in the circular pattern to be drilled is installed on the original table drive shaft on the end opposite the drive pinion. An idler gear having a number of teeth numerically equal to the gear ratio between the original pinion and table ring gear is then meshed with the index gear. A variable speed dc motor with magnetic clutch is connected to the drive shaft, and an assortment of stop and limit switches is installed in connection with the idler gear.

When the unit is actuated, the motor drives the index gear, the table, and the idler through the magnetic clutch. The limit switches are arranged so the

(continued overleaf)

idler makes exactly one revolution after actuation before the clutch is disengaged. The gear ratios in the system are designed so the table rotates a distance exactly equal to one hole spacing for each revolution of the idler gear. After the hole is drilled, the unit is again actuated for another automatic cycle.

When another circular pattern having a different number of holes is to be drilled, the index gear is removed and a new one is installed having the same number of teeth as the holes in the new pattern.

**Notes:**

1. This unit has maintained tolerances within  $\pm 0.001$  inch true location on hole patterns with up to 48 inches between centers.

2. Inquiries concerning this invention may be directed to:

Technology Utilization Officer  
Marshall Space Flight Center  
Huntsville, Alabama 35812  
Reference: B66-10383

**Patent status:**

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: M. F. Johns  
of North American Aviation, Inc.  
under contract to  
Marshall Space Flight Center  
(M-FS-753)